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DEVOTED TO THE DISSEMINATION OF INFORMATION  
CONCERNING THE THERAPEUTIC VALUE OF  
NATURAL MINERAL SPRINGS.

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## MATTONI'S MOOR SALT -FOR- BATHS.

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## DIABETES.

IN AN EXHAUSTIVE PAPER RECENTLY PUBLISHED IN VIENNA, DR. J. RUFF  
THOROUGHLY DISCUSSES THE TREATMENT OF DIABETES MELLITUS  
BY THE NATURAL THERMAL WATERS OF CARLSBAD.

The following excerpts from this able author and eminently successful practitioner are selected.

"The use of the Carlsbad mineral waters in diabetes is not the outcome of theoretic speculation, but the result of experience dating back many years. He who has not had the opportunity to study the action of the Carlsbad mineral waters in a large number of cases is not entitled to discuss their remedial value, but whoever has had this opportunity will shortly discard all doubt and with joyful enthusiasm extol the action of Carlsbad waters in diabetes mellitus as it is everywhere commended in diseases of the liver, stomach and intestinal canal. In more recent times, a theory regarding the nature and character of diabetes has been established by scientists, which is calculated to give a theoretical although not exhaustive explanation of the action of the Carlsbad mineral waters as established by experience. Without for the present entering into an extensive discussion, we will in a few words give the leading idea of this new theory regarding the character of the disease under consideration, and thereby elucidate the beneficial action of the Carlsbad mineral waters

Professor Ebstein, the renowned clinical teacher at the High School in Goettingen, who is celebrated for his studies of trophic diseases, in his work entitled "*die Zuckerharnruhr, ihre Theorie und Praxis*," (Diabetes mellitus from a theoretical and practical standpoint) defines diabetes as follows: On account of an inherent tendency the elementary tissues, (the protoplasm, of which all tissues of the human organism are composed), of a diabetic are not able to produce as much carbonic acid from a given quantity of carbonaceous material which is introduced into the body with the food, as the elementary tissues of a healthy person. This carbonic acid, however, is necessary if the sugar which is formed in the body is to be completely used up for the economy of the human organism. In consequence of this interruption in the balance between the formation and destruction of sugar in the tissues of the body, the sugar that is not used up enters, on account of its ready solubility, into the secretions, and therefore elimination of sugar by the urine takes place."

The above theory of the causation of the leading symptoms of Diabetes is based upon the well-known phenomena of physiological tissue metamorphosis, which theory Dr. Ruff elucidates at length. Continuing, he says:

"The deduction which Prof. Ebstein draws from this theory regarding the treatment of diabetes is, to quote him verbatim: "We may not only recommend the diabetic to drink waters containing carbonic acid, but one must also take into account that to the action of the carbonic acid contained in the Carlsbad waters may be ascribed a cer-



tain share of their action, inasmuch as all the thermal waters of Carlsbad are saturated with carbonic acid."

Although the remedial action of the Carlsbad mineral waters in diabetes mellitus are not exhaustively explained by this theory, for the presence of carbonic acid is shared by them with many different springs—many in fact containing a much larger percentage—without, however, being approached by any of them in the aforesaid action, still we think it necessary to mention the explanation of Prof. Ebstein. The edict of an Ebstein removes from us the necessity of proving the value of Carlsbad for diabetics.

Diabetes has been known from time immemorial, and as long as it has been known physicians have endeavored to find ways and means to cure the diabetic or at least to so shape his condition, as to enable him, without endangering his life, to remain a useful member of society. It is evident that this endeavor could not be accompanied with substantial success, as long as the chemistry of digestion was not accurately known in the healthy individual as well as in the diabetic. We therefore should not think slightly of the older physicians, if we do not find their treatment of diabetes rational according to our ideas. It rather causes us astonishment that they, in spite of their want of knowledge, should give their patients in many things, the choicest advice. In this way, CELSUS, a contemporary of CHRIST, ordered his diabetics tart wines, bodily exercise, rubbing down, lastly abstinence from everything that would increase the secretion of urine. ARETAEUS 2-3 hundred years after CHRIST, desired that the whole attention be especially directed to the derangements of the stomach. ALEXANDER VON TRALLES recommends for nourishment, the intestines, the feet and mouth of horned cattle. From these few instances may be seen that at all times the main stress was laid upon the diatetic treatment, and not upon medicine in cases of diabetes. This wholly came to pass after WILLIS, Professor of Oxford University, about the middle of the seventeenth century recognized the main feature of diabetes, the elimination of sugar with the urine, and a hundred years later, JOHN ROLLO, the harmfulness of vegetable diet for diabetics. With this, as also with the knowledge of the details of tissue metamorphosis by the Frenchman, LAVOISIER, the treatment of diabetes was brought into grooves which have not been deviated from to this day. To-day, as in by-gone times, the diet forms the main feature in the treatment of diabetes. But physicians have always endeavored to derive from nature remedies which would favorably influence the diseased process under consideration. There are not many, otherwise active medicines, whose action has not been tried in diabetes, but not from one has there been derived any noteworthy success. The only commendable exception are the mineral springs, and of these particularly those of Carlsbad, whose efficacy in diabetes, as we have shown above, has been acknowledged by the best medical authorities. Hence, after the demonstrated inefficiency of every medical treatment, diet and the balneological treatment are alone to be considered for diabetes, the details of which we will now consider.

Good, pure air for the diabetic is of eminent importance, and therefore deserves the first place in a discourse on the treatment of diabetes. If air, rich in oxygen, and free from deleterious admixtures

is indispensable for the maintenance of normal tissue metamorphosis in a healthy individual it is so in a still greater measure in one suffering from diabetes, in whom a disturbance of tissue metamorphosis—insufficient oxydation of sugar—is already present. The diabetic must endeavor under all circumstances to requite the damage of the existing abnormal tissue metamorphosis.

The diabetic will therefore do well, if he takes his prescribed quantity of water and plenty of out-door exercise.

We cannot, for obvious reasons, recommend to the patient, for whom we place pure air by day and night in the first line, a special place of residence. One thing, however, must be specially mentioned: places where most of his time can be spent in the open air deserve the preference.

The importance of the care of the skin is apparent to the healthy, but is more particularly so for the diabetic; cleansing of the whole body and full baths are therefore to the diabetic of not much less value than a healthy atmosphere for the lungs. I cannot too highly recommend the "moor baths," such as are given at Franzenbad. These may be taken by the diabetic at his own home, as the moor salt is now abstracted from the mineral mud of Franzenbad and exported. About  $\frac{1}{2}$  pound of the moor salt should be dissolved in 10 gallons of water heated to about 85° F., and the whole body should remain submerged about twenty minutes. This should be followed by a vigorous rubbing by an attendant, after which the whole body may be annointed with pure olive oil, or vaseline, and this gently rubbed in. A factor which greatly expedites the care of the skin is frequent change of linen, for "clean linen is half a bath." As regards the proper clothing, RECLAM, renowned in hygiene, writes golden words, which we will reproduce here for the diabetic: "The materials (for cloths) no matter by what name they may be known, are to be selected on account of their thickness, looseness, porosity and lightness of weight! The thicker and looser the material is, the more it keeps off from us cold and heat; the more porous it is, the more it allows free exhalations and change of air from without to the skin, so as to favor respiration by the skin; the lighter the material the less the garment will impede motion during walking, and the less it is apt to cause overheating.

It is a well known fact that mental impressions, whether sudden and of great violence, such as fright, or anger, or of less intensity but of more continuous action, such as, care, grief, etc., are in the presence of a predisposition to the same, capable of originating the disease, and in patients already suffering with Diabetes Mellitus, all the characteristic symptoms are greatly aggravated. Therefore, the mind should be free from care and the patient surrounded with influences of a soothing character. Hard mental occupation should be avoided.

In no other disease is the importance of *right living* so fully exemplified, and the medical adviser should pay particular attention to every detail of the patient's daily life. Of especial interest to the practitioner is the *diet* of the diabetic. In general terms, the carbohydrates, *i. e.*, starchy foods, such as bread, potatoes, rice, etc., should be avoided. Too severe restrictions in this direction, however, are

neither essential or desirable. (A dietary regimen is appended at the close of this article.)

Dr. RUFF allows his patients 1—2 water biscuits or  $\frac{1}{2}$ —1 roll at each meal. By a series of accurately conducted experiments the author shows that a liberal allowance of fatty foods is beneficial. His conclusions summarized, are: "In the presence of fat the consumption of albumen is diminished; that it may not only be lessened in quantity, but that a positive increase of weight may be expected. Fat therefore saves albumen, and replaces to the diabetic the loss of the carbonaceous elements." Tobacco is prohibited. Acid wines and fruits are permitted. The use of saccharine as a substitute for the sweetening properties of sugar has proven in the doctors experience, neither essential to the comfort of the patient nor conducive to the cure of his disease. It is therefore not recommended.

From consideration of the hygienic and dietary treatment of diabetes, the writer passes to the medicinal treatment, which he dismisses in the following words: "After many years of careful study and after having treated very many cases of Diabetes Mellitus, I am fully convinced of the superior excellence of the natural Carlsbad water, and that if the diabetic will carefully observe the foregoing rules regarding diet, exercise and baths, and at the same time make rational use of the natural mineral waters of Carlsbad, he will be cured, or at least find an amelioration of his disease, and be able to attend to his daily avocations with renewed strength and with the assurance of many years of a comfortable life."

The following article from the pen of D. B. Hofmeister, published in the May number of *The British Medical Journal*, further illustrates the salient points in the treatment of Diabetes Mellitus:

"About a century has passed since Carlsbad waters began to be used in diabetes mellitus. At that time, when the number of watering places were very small, all patients with chronic, hardly curable diseases, were sent there as a last resource; when it became known that some diabetic patients had derived benefit from its waters, Carlsbad was regarded as a specific. At the present time the number of health resorts has enormously increased, and some of them boast of the same efficacy in diabetes as Carlsbad; pamphlets have been issued denying that Carlsbad has any efficacy, and various methods of treating the disease have been invented; yet the sufferers from that disease mostly prefer the Carlsbad waters, and the number of them who visit it increases every year. That this reputation is fully justified will be shown in the course of this paper.

I do not propose to discuss the multifarious theories as to the etiology of diabetes which have been propounded by Claude Bernard and so many others, up to the present time; I will only refer to Ebstein's recent hypothesis, which has some relation to the Carlsbad treatment.

Whilst most authors seek the origin of diabetes in a disorder of one organ of the body—the liver, stomach, pancreas, kidney or brain—Ebstein places its seat in the protoplasm of nearly all the cells of the body; but he denies that the presence of sugar in the urine is the result of a deficient combustion of the normal amount of sugar into carbonic acid and water, and refers it to an over-formation of sugar,

occasioned by the want of a sufficient amount of carbonic acid in the protoplasm of the cells. By a series of chemical experiments he has found that the capacity of diastatic ferments to decompose hydrocarbon is much restricted by the presence of a certain amount of Carbonic Acid ( $\text{CO}_2$ ); when this is lessened, the glycogen in the human tissue, he says, will easily be transformed into sugar. He thus looks upon diabetes as a chemical disorder, due to an anomalous nervous influence, the nature of which, however, he is at a loss to explain.

According to this theory—the truth or falsity of which has still to be established—the direct introduction of  $\text{CO}_2$  into the protoplasm by the blood would be a rational method of treating diabetes; Ebstein goes so far as to recommend injections of  $\text{CO}_2$  into the rectum. Now, it is certain that alkaline waters containing a large quantity of free carbonic acid, especially those of Carlsbad, tend to lower the amount of sugar in the urine, and consequently to improve the health; but, on the other hand, it cannot be denied that their curative action is but slight, unless coupled with a proper antidiabetic diet, consisting in the main in avoiding sweet and farinaceous food. The combination of both these plans must still be regarded as the best method of treating diabetes; therein all Carlsbad physicians agree. They differ only in one point, namely, as to the significance which is to be attached to the quantity of sugar to be found in urine, in regard to the prognosis and treatment of diabetes.

As is well known, two forms of diabetes are usually distinguished; (1) the slight form, the amount of sugar being directly proportioned to that of starch matters taken by the patient, and accordingly entirely disappearing if they are only abstained from; (2) the severe form, in which more or less sugar is present in the urine, in spite of the strictest antidiabetic regimen, and in which, therefore, sugar is formed also from albuminates. This classification, however, which cannot be applied to each individual case, and does not comprise all cases, has been much criticised of late, and will probably soon be abandoned.

As a guide in treatment, I venture to propose a practical division of diabetes into three large groups.

(a) *Sugar in Proportion to the Severity of the Disease.*—A great many of the most conspicuous symptoms (sugar in the urine from 1 to 7 per cent. polyuria, polydipsia, emaciation, languor, impotence, etc.) were present. This form is by far the most common of all, and, as it can never fail to be clearly recognised, we may call it "diabetes manifestus."

(b) *Much Sugar, with Slight Diabetic Symptoms.*—In patients of this group we may find from 1 to 5 per cent. of sugar, and even more, and yet with such slight diabetic symptoms that they escape the notice both of the patient and the physician. Here we mostly observe disorders of the stomach and intestines, sometimes of the nervous system. The diagnosis is incidentally made by an examination of the urine. This form is more frequently met with than might be supposed, and is rightly called 'diabetes decipiens.'

CASE 1.—T. B., lawyer, middle-aged, had always enjoyed good health. In the year 1887 he first complained of *malaise* and irritability of temper, which he was inclined to ascribe to slight dyspepsia



with constipation. Having formerly been of a cheerful disposition, he gradually became moody and irascible, and in August, 1887, he went to Switzerland, thinking that rest and change of scene would do him good. At Geneva he consulted a physician, who accidentally set at the same *table d'hôte* with him, and thus had the opportunity of observing the patient's inordinate fondness for sugar and sweets. Out of mere curiosity he analysed B.'s urine, and was surprised to find 5.5 per cent. of sugar two hours after dinner, and about 3 per cent. at different hours on subsequent days.

At the end of August B. began to take Carlsbad Water. I could detect no symptom pointing to diabetes beyond a certain degree of nervousness manifesting itself, particularly in headache and insomnia. At first I was inclined to look upon the case as one of simple glycosuria, due to the vast amount of sugar consumed by the patient, although in normal constitutions we find at most very slight traces of sugar from this cause. I soon became convinced, however, that I had to deal with a real diabetes mellitus, for though the patient abstained entirely from sweet matters, from 2 to 3 per cent. of sugar was still found in the first week of treatment; the following week it gradually decreased, and in a fortnight it had entirely disappeared. With the cessation of sugar-excretion the patient greatly improved, the headache and insomnia left him, and he regained his natural cheerfulness. The last week he was allowed to take a moderate amount of farinaceous food (80 grammes of white bread in the day), of all sorts of vegetables, and of uncooked fruit, without the sugar reappearing. During the following three years his health remained excellent, when suddenly, without any evident cause, a relapse occurred in July, 1887, which was again cured by the treatment with Carlsbad Water.

CASE II.—B. P., aged 42, was sent in 1886 to Carlsbad for habitual constipation of very long standing. Many remedies had previously been tried in vain. The patient's habits were not sedentary; he did not suffer from hemorrhoids; his appetite was pretty good; there was no apparent disorder in any other organ. His urine was found to contain 4.6 per cent. of sugar. On being closely questioned he remembered having sometimes felt dryness of the tongue, and he had become somewhat thinner of late. He had always drunk beer very freely, and was not conscious of greater thirst than heretofore. After four weeks of treatment he left Carlsbad without a trace of sugar. Next year, 1887, he came again, but this time only "to show himself," for he had not been troubled with dryness of the tongue, and his bowels acted regularly; in short, he felt perfectly well. I was the more surprised to find again 3.2 per cent. of sugar; he had kept at home on stricter diet only for some weeks, and then, feeling quite well, indulged in ordinary food, like other people. Three weeks treatment with Carlsbad Water sufficed this time to remove all trace of sugar; the patient on leaving was advised to diet himself strictly for a whole year.

I am of opinion that all forms of diabetes decipiens exist only for a certain time as such, for one year or two at most, after which the more conspicuous symptoms of diabetes slowly appear; the cases are a contrast to diabetes acutissimus.

(c) *Little Sugar and Severe Symptoms*.—Patients of this group suffer from severe disturbances in various parts of the system, or in general nutrition, and yet have a minimum of sugar in their urine, not only in the beginning, but sometimes also during a very long period, so that it can be found only by a most careful and thorough examination of the urine by special methods. The direct contrast which this group offers to the preceding one (b) is obvious. From its resemblance in this respect to the form of fever known as “intermittens larvata,” in which the characteristic paroxysms are replaced by quite different symptoms, this form may be called “diabetes larvatus.”

CASE III.—K. D., merchant, aged 52, who had always been healthy, first became aware of gradual emaciation in the spring of 1885; otherwise he felt quite well. Some time later a dyspepsia nervosa occurred with loss of appetite; this having been cured by medicine, the emaciation nevertheless progressed in such a measure that his weight fell from 85 to 72 kilogrammes (187 to 158½ English pounds) within eight months. The first analysis of the urine, which was made on November 10th, 1886, showed 0.7 per cent. of sugar. He kept the antidiabetic diet during the whole winter; the sugar disappeared, and his weight increased to 75 kilogrammes (165 pounds). In April, 1887, he returned to ordinary food, when he again began to lose flesh; there was, however, no thirst, no polyuria, no impotence, no skin affection. At the end of May he began to suffer from great nervous irritability, without any apparent cause. He was sent to the seaside, where several, probably superficial examinations of the urine gave no evidence of sugar. Feeling no better, the patient came to Carlsbad on August 19th, 1887. On the day of his arrival I could discover distinct traces of sugar. I persuaded the patient to live in a strictly antidiabetic manner, and ordered him two tumblersful of Carlsbad Muehlbrunn daily. In two weeks he had gained two kilogrammes (4½ pounds), felt pretty well, and no sugar was to be found. By way of experiment, I then allowed a moderate use of starchy matters for three days, when small traces of sugar were again detected. I therefore recommended him to keep to the strictest diet for a whole year. This patient, whom I accidentally met a short time ago, had followed my advice strictly, and is now much better as regards his nervousness; his nutrition has likewise improved, his weight being 80 kilogrammes (176 pounds).

This case clearly proves that the severe disorders of nutrition—namely, the emaciation in diabetes—is not the consequence of an overformation of sugar from glycogen, nor of its loss by passing out of the body, but that it is as important a symptom of diabetes as the excretion of sugar itself, although there may be no casual connections between them.

CASE IV.—Mrs. G. C., aged 38, who three years before had been plump and rosy, now somewhat thin and pale, had never had any serious illness; four children; menstruation perfectly regular. In 1884 she began to be troubled with such intense itching in the vulva and the surrounding parts that she could not help frequently scratching herself. In this way her sleep was disturbed every night; by-and-by she lost appetite, and fell into a state of melancholy and despair. She could not make up her mind to seek medical advice till the end of

1885, when both her thighs and the lower half of the abdomen were covered with eczema from scratching. She was treated with various plasters and ointments for nearly two years, but all in vain. For a short time she would seem to improve, but this was always followed by relapse. The urine was examined several times, but either a very small quantity of sugar, or none at all was found. I could not learn what method of examination had been used. The patient came to Carlsbad on July 27th, 1887. An immediate examination of the urine showed 0.5 per cent. of sugar. She was then treated like Case III. After one week the itching had nearly subsided, and the eczema had much improved without any local treatment, while sleep was no longer disturbed. In the second week the patient, thinking that she need not keep strictly to the diet I had prescribed, took two rolls of white bread daily at dinner, and in two days was again as bad as before, the sugar, which had entirely disappeared, returning to the extent of 0.4 per cent. After that she followed the treatment strictly, and left Carlsbad wholly cured.

Until recently it was the general belief—and the opinion is still held by some—that small quantities of sugar in the urine are of no particular significance, and do not call for treatment. It is indeed true that it is not the loss of this trifling quantity of sugar which causes such serious symptoms, since we observe large losses of sugar pretty well tolerated by the system (Group *b*); but it is, and I lay much stress upon this point, a highly important piece of evidence in the diagnosis and treatment of a series of cases, in which no treatment but the strictest antidiabetic regimen will be of the least benefit. The greater or less amount of sugar in urine—within certain limits—will therefore never give us a reliable ground for prognosis, inasmuch as in some cases it is in inverse ratio to the severity and danger of the disease. Thus, when we meet with various maladies, like neurasthenia, dyspepsia, emaciation, eczema, retinitis, cataract, boils, etc., and in connection with them an excretion of even mere traces of sugar (such excretion being not temporary but permanent), we must not hesitate to diagnose diabetes mellitus, and to treat the case accordingly.

*Artificial Glycosuria.*—The diagnosis of diabetes larvatus is sometimes rendered difficult by its resemblance to the so-called “glycosuria transitoria,” or diabetes alternans. It is well known that there are different maladies (gout, rheumatism, typhoid fever, meningitis, epilepsy), in which small quantities of sugar suddenly appear in the urine. We likewise know that an excretion of sugar may be artificially produced by a severe injury, by serious abdominal operations, especially by lesion of the floor of the fourth ventricle or of the medulla oblongata, and by cutting the roots of the spinal nerves. But this kind of glycosuria cannot be regarded as diabetes mellitus; there is an essential difference between them. 1. The artificial and transient glycosuria disappears with the attack which calls it forth, or lasts some days, or at most some weeks after it. 2. It is never followed by serious consequences. 3. A further distinctive feature is its entire independence of starchy food. The risk of confounding them may therefore be easily avoided.

*Significance of the Quantity of Sugar.*—There are no absolutely trustworthy signs which enable us to distinguish the severe cases from the milder ones; in general such cases are to be regarded as bad ones, in which, in spite of medication and strict antidiabetic diet, sugar persists above 1 per cent. There are, however, exceptions to this rule. In former times great significance was attached to the complication of sugar with acetone or diacetic acid in the urine, but this has proved false, severe and mild cases having been equally observed with and without acetonuria. My experience of late years has taught me to regard the complication with nervousness, especially restlessness, irritability, and sleeplessness, as very serious. The quantity of sugar in itself is, as has already been mentioned, of no great influence upon the prognosis: the largest amount may disappear in the shortest time by proper treatment, while the smallest quantities, as can be gathered from Cases III and IV, are sometimes associated with serious disorders of the system, and cannot be got rid of by any means at our disposal.

*Estimation of Sugar in the Urine.*—Owing to this fact, it may not be superfluous to add some words about the recent introduction of more accurate methods for the detection of the smallest traces of sugar present in the urine; but from want of space I can only mention those which, from their simplicity, are most available for the ordinary practitioner.

1. *Fehling's Method Modified by Seegen.*—The urine is filtered through a thick layer of animal charcoal (of blood), which absorbs the whole of the sugar; the charcoal is washed out with distilled water, which dissolves out the sugar, which may be tested with Fehling's solution, traces of sugar will be found in the second, and even in the third and fourth washing. This method is mostly used by the chemists of Carlsbad.

2. *Penzoldt's Method.*—Some drops of a solution of acetate of lead, mixed with some drops of ammonia, are poured into a testing tube, half filled with urine. If sugar be present, the precipitate will be rose-coloured; if not, white. This is a pretty good and sensitive test.

3. *Johnson's Method.*—Some drops of picric acid are added to the urine, which is then mixed with a solution of potash slightly heated. A light red colour appears in normal urine; the presence of sugar makes the colour deep red. As the difference between the two is only a difference in shade and not in colour, the observer is naturally exposed to optical mistakes, a matter which impairs the value of the test. It can, nevertheless, be recommended for its other good qualities.

4. *E. Fischer's Method Modified by Jaksch.*—This method is highly to be recommended in every respect. It is based on the power of phenylhydrazine to unite with grape sugar and form characteristic crystals. To a measuring beaker half full of water, two drachms of hydrochloric phenylhydrazine and three of sodium acetate are added; the compound having been heated a little, the same quantity of urine

are added, and placed in a vessel of boiling water for 15 minutes; it is then quickly put in very cold water. After standing for some minutes a yellow sediment slowly falls, in which crystals of phenyl-glucosazon are always to be found if the least quantity of grape sugar be present in the urine. These yellow crystals have the shape of long rods, terminating at each end in round balls or bunches.

5. *Molisch's Method.*—The recently invented double method of Molisch ([1] *a* naphthol and [2] thymol, both with sulphuric acid) is worthy of mention, as it will detect the presence of even 0.0001 per cent. of grape sugar; it is, however, entirely useless for our purpose, as it produces exactly the same reaction with cane sugar, maltose, and all dissolved albuminates.

*Treatment.* 1. The dietetic and hygienic regimen ought not to be totally changed in a sudden way. Sweet things must be at once forbidden; the starchy food should at first be confined to vegetables of all kinds, except the leguminous ones, and bread, 100 grammes of which may be allowed, this quantity being gradually reduced to 60 grammes, and so on.

2. Pure fat and fatty meats are highly to be recommended for their great efficacy against congenital predisposition to diabetes; 150–200 grammes may be allowed daily.

3. An exclusive meat diet (Banting treatment) is rather dangerous in diabetes, because it strongly promotes the disintegration of albumen, that is to say, emaciation.

4. All substitutes for bread are objectionable, partly because they contain a considerable amount of starch, and partly because they are all more or less indigestible.

5. Diabetics ought to masticate perfectly each bit of food, eating slowly, in order to mix the food completely with the mucus of the mouth.

6. In all cases in which a somewhat larger indulgence, with regard to the diet is admissible, all sorts of vegetables, including the sweet ones (turnips, carrots, cabbages, etc.) only excluding the leguminous peas, beans and lentils) are permitted, likewise raw kernel fruits and berries.

7. Milk and wine should be allowed only in small quantities, even in mild cases; half a pint of each daily should be looked upon as the maximum dose. All sorts of beer must be forbidden under all circumstances.

8. Exercise is much indicated, especially as long as farinaceous food is partly allowed. The best time for it is immediately after dinner, and it should be continued for at least two hours. Riding on horseback and hill climbing (if the ascent is not too steep) are certainly preferable to gymnastic movements indoors. Patients who, in any stage of the disease, are easily fatigued by the least muscular exertion,

will derive great benefit from daily massage of the whole body for twenty minutes (Finkler).

9. Warm baths, as the best means of keeping the functions of the skin in order, are very beneficial to sufferers from diabetes, provided that they are used at a temperature of  $93^{\circ}$  to  $94^{\circ}$  for fifteen minutes, not oftener than twice a week.

10. The mineral waters of Carlsbad are undoubtedly of the greatest use in the dietetic and medical treatment of diabetes; their effect is mostly due to the alkaline salts they contain. Although there are several alkaline springs in Germany and elsewhere, which have similar ingredients, though in different proportions, yet in their efficacy against diabetes they are far inferior to Carlsbad.

According to the theory of Ebstein, referred to at the beginning of this paper, the efficacy of alkaline waters in general would be clearly explained by the direct supply of carbonic salts and free carbonic acid to the protoplasm of cells of the whole system; but the question why any other mineral water with as much carbonic acid is not to be compared to those of Carlsbad in efficacy against diabetes remains unanswered. Pfeiffer, of Wiesbaden, attributes to Carlsbad waters the capacity of restraining the organic disintegration, and hence their beneficial influence in diabetes accompanied by emaciation. *The quantity to be taken in diabetes* is not different from that indicated in other diseases. Generally one or two tumblersful in the morning, half an hour before breakfast, and two to three tumblersful during the day, always an hour before or after the meals and never with meals. It is continued until the urine becomes alkaline, or other symptoms of saturation appear.

In severer cases the treatment should be carried out twice a year—in the spring and in the autumn.

In conclusion, I venture to lay down the following propositions, as summing up the results of my studies and observations:

1. We are still in total ignorance as to the etiology of diabetes mellitus.

2. The quantity of sugar found in the urine is of no significance at all in judging of the severity and danger of any particular case of diabetes.

3. The smallest traces of sugar, found only by most careful chemical examination of the urine, are of considerable importance in a great many cases, so that they cannot be left out of account in trying to arrive at a correct diagnosis and prognosis.

4. The dietetic treatment must be adapted to the special requirements of each case, as there are cases in which, without regard to the amount of sugar excreted, complete abstention from starchy matters is not only useless, but directly injurious.

5. According to the present knowledge, strict antidiabetic diet, combined with the use of the mineral waters of Carlsbad, is the best method of treating diabetes mellitus.



## DIET IN DIABETES.

Patients taking the natural thermal waters of Carlsbad for the cure of diabetes mellitus are advised to observe the following dietary regimen as nearly as their circumstances will permit.

Almond rusks, almond bisquits, gluten bread, maccaroni, stale bread, sparingly; bacon, butter, cheese, eggs, beef tea and thin soups, beef, mutton, fish, game and poultry; cabbage, lettuce, string beans, tomatoes, spinach, greens, olives; custards without sugar, buttermilk, jellies not sweetened, nuts; coffee, cocoa, claret; acid fruits, lemons, cherries, currants, strawberries; chopped beefsteak; Giesshuebler water, or soda water, or pure water, black tea, without sugar or milk; dry wines, and sour wines generally.

ARTICLES FORBIDDEN.—Peas, beans, lentils, potatoes, sweet potatoes, carrots, beets, rice, wheat, oatmeal, oysters, liver, maize, made dishes, arrowroot, buckwheat, sago, tapioca and puddings generally, apples, bananas and sweet fruits, milk, sugar, chocolate, ales and sweet wines.

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DR. L. FLECKLES, Royal Pruss. Medical Councilor, whose extended experience entitles his utterances to the weight of an authority, says:

“For allaying the inordinate thirst in diabetes, and at the same time altering the pathological state, nothing is better than the Carlsbad Water taken hot, alternated with the Sodid Carbonate Water of Giesshuebel (Giesshuebel Mineral Water).

About two tumblersful of the Sprudel Water should be taken after meals. The Giesshuebler may be drank *ad libitum* during the intervals between meals.

It is truly remarkable how soon the thirst is assuaged and the quantity of urine diminished after commencing the Carlsbad cure. The value of the Carlsbad water for the relief of the hunger, thirst and muscular weakness, as well as the dryness of the skin is far greater than that of the opium preparations which are so generally relied upon to relieve these vexatious symptoms. Under the influence of the Carlsbad water, the nervous irritability ceases, the sugar disappears from the urine, impotent patients often regain their virility, and all the functions of the body are again performed with ease.”

PROF. SEEGAN, of the University of Vienna, in his recent valuable work upon Diabetes Mellitus says:—

“Of all remedies in my large experience with this disease, and the many experiments which I as well as others have made, Carlsbad Water deserves to be placed in the front rank.”

# CARLSBAD

## Natural Mineral Waters

"Sprudel." "Schlossbrunnen," "Mühlbrunnen,"

Obtained from the celebrated Alkaline and Saline Springs and famous Health Resort of CARLSBAD, Bohemia.

These Waters are imported in bottles and may be used in the treatment of all cases in which the Carlsbad cure is indicated when patients are unable to visit the Spa. The Carlsbad cure is recommended in CHRONIC GASTRIC CATARRH, HYPERCÆMIA OF LIVER, GALL-STONES, CHRONIC CONSTIPATION, DIABETES, RENAL CALCULI, GOUT, and diseases of the spleen arising from residence in the tropics or malarious districts.

**FACSIMILE OF BOTTLE.**  
(Two-thirds of actual size)



The Genuine Imported Carlsbad Sprudel Salt is put up in round bottles. Each bottle comes in a paper cartoon, and has the seal of the City of Carlsbad and the signature of "EISNER & MENDELSON Co." Sole Agents, on the neck of every bottle and on the outside cartoon.

## NATURAL

### Carlsbad Sprudel Salt,

In POWDER FORM,

is the best

**APERIENT, LAXATIVE AND DIURETIC,**

Easily Soluble, Palatable, and Permanent.

*As an Aperient it should be taken before breakfast.*

#### THE NATURAL CARLSBAD MINERAL WATERS

are unsurpassed for the cure of Catarrh of the Stomach, and diseases of the Liver, Kidneys and Bladder, Diabetes, Rheumatism, Gout, Chronic Constipation and Obesity. These waters are imported regularly in bottles. To increase the aperient action of the natural Carlsbad Mineral Waters, a teaspoonful of the imported Carlsbad Sprudel Salt, previously dissolved in a little hot water, should be added.

Dr. B London says "The Natural Mineral Waters of Carlsbad ACCELERATE ABSORPTION, STIMULATE NUTRITION, CORRECT ACIDITY, AID DIGESTION, CALM THE NERVES, SOOTHE IRRITATION, and PURIFY THE BLOOD. In my experience they have proved the MOST RELIABLE CURATIVE AGENT ever employed."

Pamphlets mailed free upon application.

**EISNER & MENDELSON COMPANY, Sole Agents,**  
6 Barclay Street New York.

# GIESSHUEBLER

## Natural Mineral Water.

"The Empress of Table Waters."

**THE PUREST ALKALINE ACIDULOUS SPRING.**

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The world-wide reputation enjoyed by Carlsbad for centuries has, for many years past, been deservedly shared by the neighboring **GIESSHUEBEL**, with its acidulous alkaline springs.

This has been chiefly caused by the result of the exhaustive analyses lately made of those waters, especially by the eminent Prof. **LIEBIG**, as well as by the widely published results of trials made with them by experienced clinical teachers (**KROMBOLZ**, **OPPOLZER**, **LOESCHNER**, **SEEGEN**), and other medical practitioners.

The **Giesshuebler Water**, excelling as it does, all other similar waters, is a mild, and at the same time a pure alkaline sodaic spring, it not only forms a highly valued medical remedy, but also an exquisite beverage. It was the first sodaic spring discovered, analyzed and used for medical purposes. It forms the favorite and almost exclusive beverage of the patients at Carlsbad, who are strongly advised to continue its use at home.

As an ordinary sparkling beverage the **Giesshuebler Water** is more pungent, cooling and agreeably refreshing than any other water containing carbonic acid gas. Its effervescence is purely natural (not like water charged with foreign gases), and therefore free from the injurious results which frequently attend the use in large quantities of other waters. It may be consumed in any quantity during the day, either with or without wine or spirits. It is well adapted for mixing with white acidulous wine, since the bicarbonate of soda contained in it neutralizes the acid of the wine, and thus discharges the carbonic acid gas, imparting an agreeable taste to the palate, and when mixed with Champagne, Claret, Hock, Brandy or Whisky, it in no way destroys their character.

The **Giesshuebler Water**, on account of its agreeable taste and its mild and yet decided action, is well adapted for children, delicate and weak ladies, and for gentlemen enervated by a long standing illness. In these cases the use of acidulated cold and alkaline hot springs is restricted on account of morbidly increased nervous sensibility.

The beneficial use of this acidulous Spring during a cure at Carlsbad is also acknowledged by the physicians residing in that place, and it is generally recommended as an after-cure. Independently of its important medicinal value, the **GIESSHUEBLER** stands foremost among all other similar Mineral Waters as a Common Beverage, with or apart from the meals, because it quenches the thirst, causes a refreshing, strengthening, and invigorating sensation, and imparts to the system a cooling and comforting influence.

Concerning the mode of its use in general, it may be said that as a curative agent it may be taken every two hours, and not too cold, while as a common beverage it may be consumed in any quantity desired during the day (either with or without wine or spirits.)

Experience has shown that this Mineral Water will keep unchanged for years, if stored in cool places; consequently is suitable for exportation. This is proved by the regular large quantities forwarded to Batavia, the East Indies, and other transatlantic places.

Another great advantage of the **Giesshuebler Water** is, that it retains its gas for an unusually long period after the bottle has been opened.

## **OFFICIAL CERTIFICATE FROM THE LONDON HOSPITAL,**

Whitechapel Road.

SIR:—The House Governor has requested me to reply to your letter of the 3d inst. I beg to state, that the

### **FRANCIS JOSEPH BITTER-WATER**

has been prescribed by several of our Physicians for Patients in the Hospital and that it has given every satisfaction. LONDON, July 22, 1884.

To the Managers of the  
**FRANCIS JOSEPH BITTER SPRING, Budapest:**

Yours Faithfully,  
**GEO. ROBERTSON.**

#### **Medical Properties of the FRANCIS JOSEPH BITTER-Water, From a Pamphlet published by Dr. C. F. KUNZE, Halle.**

- |   |  |
|---|--|
| <ol style="list-style-type: none"><li>1. For Constipation and disorders consequent thereon.</li><li>2. Imperfect circulation in the abdomen, haemorrhoids and disorders of the liver.</li><li>3. Tendency of blood to the head and lungs.</li></ol> | <ol style="list-style-type: none"><li>4. Various disorders of the female sexual organs.</li><li>5. Catarrh of the stomach and intestine.</li><li>6. Full habit of body, fatty degeneration of the liver and gall stones.</li></ol> |
|---|--|

#### **No. 80. Official Certificate from the Board of Directors of the General Hospital in Budapest.**

"The Reports of the Divisional Superintendents agree in stating that the FRANCIS JOSEPH Bitter Spring was specially successful in:

1. A series of disorders of the organs of digestion, such as catarrh of the stomach and intestine, obstinate constipation, stoppage of the circulation in the abdomen and consequent tendency of the blood to rise to the head and chest (headache, ringing of the ears, giddiness, palpitation of the heart, tightness of the chest). 2. Various disorders of the liver (jaundice, stoppage of bile, gallstones). 3. Haemorrhoids. 4. Accumulation of fat. 5. Disorders peculiar to females (irregularities of menstruation, constipation before and after confinement)."

Extract from a Pamphlet on the FRANCIS JOSEPH Bitter Spring  
Containing the results of the clinical examination.

"This Mineral Water, so marked as regards its chemical constituents, is to be looked upon as the **REAL REPRESENTATIVE OF BITTER-WATERS**. It is not objected to by patients and its continued use is not attended by any inconvenience. The aperient action is attained by smaller doses of this than of any other similar water." August 31st, 1878.

#### **Observations made under the personal direction of Prof. DRASCHE in the 5th Medical Department of the Imperial General Hospital in Vienna.**

**Approval of the Academy of Medicine, Paris:** A repetition of the analysis gave 30.7 grammes of sulphate of soda and 21.6 grammes of sulphate of magnesia per liter. It is evident, therefore, that this water is highly charged with aperient salts and that nothing stands in the way of a favorable reception of the demand for its introduction. Extract from Dr. Poggiale's Report to the Academy of Medicine. Meeting of August 13th, 1878.

#### **Opinion of Dr. GRANICHESTADEN, emeritus City Physician in Vienna, Imperial Physician to the City and Court Opera.**

"Persons compelled by their profession to adopt a sedentary life or prevented from taking the necessary physical exercises suffer sooner or later from irregularities of the organs of digestion, which make themselves evident in loss of appetite, sense of discomfort after every meal, chronic derangement of the stomach, pains in the loins, obstinate constipation, disorders of the liver or haemorrhoids. No other Bitter-Water and no vegetable drug renders such excellent service or is of such prolonged benefit as treatment for several weeks with Francis Joseph Bitter Spring."

*A wineglassful taken early in the morning or on an empty stomach is generally sufficient as an ordinary dose; the temperature of the water should not exceed 59° F. No family or household should be without this well tried natural mineral Bitter-Water.*

**FRANZ JOSEPH SPRING, P. O. Box 3319 New York.**

# LEVICO.

The watering place "Levico," in Southern Tyrol, is situated in the Sugana Valley, eleven miles from Trient, and is a most charming mountain retreat, on the eastern shore of Lake Levico.

On the Monte Fronte, near the Alpine Kurhotel "Vitriolo," 4500 feet above the level of the Adriatic, the Springs flow forth from romantic grottos. They contain a large amount of copper, iron and arsenic, and flow at the rate of eleven quarts a minute.

According to the last analysis made by the celebrated Vienna Prof. Dr. L. Barth, the Levico Springs are the richest in Europe, as regards their percentage of arsenic, Prof. Dr. Barth calls them simply unique.

The water from two of the springs is bottled for export. Analysis shows that the waters from these two springs differ from each other in the relative percentage of arsenic and iron; one containing a larger percentage of iron (*Levico mild*), the other a larger percentage of arsenic (*Levico strong*) and correspondingly less percentage of iron.

It is recommended by eminent European practitioners of medicine to begin the administration of Levico Water, with the milder water, that is the one richest in iron, as a stomach irritation is thereby avoided.

The waters are palatable and efficient in small doses and may be given in wine, water or milk as preferred. The water comes to us highly recommended by the European profession to whom it has been known for some years, and has recently been well introduced to the profession of America, in New York and New Orleans, and has received flattering commendation from most eminent practitioners.

Prof. Dr. Ludwig R. v. Barth, University of Vienna, says: "The remarkably large percentage of arsenic contained in Levico Water, places it in a unique position among all natural waters. It contains about twenty times as much free arsenious acid as any other mineral water of its kind."

Prof. Dr. Theodore Billroth, University of Vienna, says: "I appreciate the restorative qualities of Levico Water, and prescribed it very often."

Prof. Dr. A. Obalinski, University of Krakaw, says: "Levico Water has proved to me a boon in cases of general scrophulosis, local tuberculosis and lymphatic derangement."

The mineral waters of Levico are principally effective in cases of poorness of blood. In general chlorosis, Anæmia, slow convalescence after a serious illness, or after a great loss of blood, female sterility, verite impotence, old wounds, scrophulosis, gout and chronic rheumatism, constitutional syphilis, diseases of the spine, paralysis and nervous affections of all kind.

The powerful alterative and tonic properties of Levico Water together with its palatability, its uniformity and certainty of action place it in the first rank, among remedies of this class.

The water may be obtained of most leading drug stores in the principal cities of the United States.

Information and literature relative to Levico, will be furnished upon application to the Sole Agents of the United States, the EISNER & MENDELSON Co., No. 6 Barclay Street, New York.



[From the MEDICAL TIMES.]

## Johann Hoff's Malt Extract as a Therapeutic Agent.

Having had marked success in the use of Johann Hoff's Malt Extract (Eisner's), I deem it proper to report a few cases.

On the 25th of Nov., 1886, I was called to see P. R., age five months. Father had tuberculosis, mother strong and healthy, nursing the child at the breast. Hygienic surroundings bad, house damp. The child has had a cough almost since birth, which had been growing worse; it had been losing flesh (marked emaciation); vomited occasionally through the day. Bowels regular, containing at times mucopurulent matter, most likely from the lungs. Pulse weak and rapid; tongue coated, child peevish. Physical signs: large and small rales in various parts of both lungs, prolonged expiration; percussion dullness at various points. The child was placed upon half-teaspoonful doses of Johann Hoff's Malt Extract (Eisner's) four times a day. I wish to call particular attention to the fact that this Extract should be administered warm in cases of lung disease.

Dec. 9, 1886. The child is much better, the cough slight, appetite improved, vomiting ceased. The stools contain very little mucopus. Respiratory sounds approaching the normal; the dullness is clearing. Ordered teaspoonful doses of the Extract four times a day.

Jan 6, 1887. The child has been well for more than a week. It is well nourished, pulse strong, stool normal. The cough has disappeared; lung sounds normal. Child discharged cured. Diagnosis: *Tubes*.

H. B., age 6. Had nasal diphtheria on Oct. 28, 1886. Was fully recovered on Nov. 17. About Dec. 6th the mother noticed an impediment in the child's speech, and sent for me. The patient was markedly anæmic; spoke with a nasal twang, and severe attacks of coughing followed the act of swallowing liquids. Diagnosis: Diphtheritic paralysis of the pharynx. Treatment: *Strychniæ sulph. gr. 1/16*; *Quiniæ sulph. and ferri sulph. aa gr. ss.* in pill, three times a day.

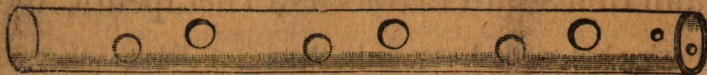
Dec. 12. Child slightly improved. Stopped the pills and ordered teaspoonful doses of Johann Hoff's Malt Extract (Eisner's) four times a day. Jan. 4. The child has made a complete recovery.

Was called to attend Mrs. M. W., æt. 42, on Dec. 13, 1886. Her family history is good. Was perfectly well, up to four months ago. Her husband died a year ago of phthisis. Physical examination revealed the early stages of tuberculosis, affecting the left lung. Debility has been so marked that she has not been able to get out of bed for the last five weeks. The cough was very troublesome, pulse weak. Ordered a wineglassful of the Johann Hoff's Malt Extract (Eisner's) four times a day. Dec. 24, 1886. The patient states that before she had emptied the second bottle she was able to walk across the room. At this date she was down stairs; was much stronger; pulse improved; cough not so troublesome; chest sounds markedly improved. Patient had gained very much in strength, and was able to perform household duties.



# ANTISEPTIC DRAINAGE TUBES.

## GLASS.



Made after Patterns furnished by Prof. S. W. Gross.

These Tubes have large holes, one-half inch apart, arranged alternately on opposite sides.

They are carefully finished, especial care being taken to make them smooth.

In addition to the drainage holes, each tube has at one end, two smaller holes for the insertion of Safety Pin, through which it is prevented slipping into the wound.

## FURNISHED IN SEVEN SIZES.

No. 1,	Length 63 mm.,	Diameter 7 mm.,	4 Holes	-	-	\$1.25 per dozen.
No. 2,	" 63 mm.,	" 8 mm.,	4 "	-	-	1.25 "
No. 3,	" 76 mm.,	" 9 mm.,	5 "	-	-	1.40 "
No. 4,	" 88 mm.,	" 9 mm.,	6 "	-	-	1.55 "
No. 5,	" 101 mm.,	" 9 mm.,	7 "	-	-	1.70 "
No. 6,	" 114 mm.,	" 9 mm.,	8 "	-	-	1.90 "
No. 7,	" 126 mm.,	" 10 mm.,	9 "	-	-	2.10 "

## RAW CAT-GUT.

Professor Gross stated at one of his surgical clinics in the Jefferson Medical College Hospital, that he had just concluded a series of experiments with cat-guts obtained from different sources; and that the article which I now offer for sale, he considered superior to all others. I put this up in coils of 10 feet, four different sizes, Nos. 1, 2, 3, 4, (4 is the thickest). Nos. 2 and 3 are the most useful sizes. No. 1 coil, 10 cents; No. 2 coil, 12 cents; No. 3 coil, 14 cents; No. 4 coil, 16 cents. Full directions with each coil for making it absolutely aseptic.

The various Instruments and Appliances devised by Dr. R. J. Levis kept constantly in stock; the original models having been manufactured under the personal direction of Dr. Levis. Purchasers can rely upon their accuracy.

Special attention given to the fitting up of hospitals with Operating Tables, Ward Carriages, Instrument Trays, and the different appliances for antiseptic surgery.

## WILLIAM SNOWDEN,

Manufacturer, Importer and Exporter of Surgical Instruments,

No. 7 South Eleventh Street, Philad'a.

## "LEVULOSE FERRIDE."

The action of "Levulose ferride" is a very mild one, and has proved to be very beneficial in cases where other iron preparations have been refused by the stomach, as in gastric and intermittent fevers, etc.

"Levulose ferride" contains 3% metallic iron, and can be given to children of all ages by itself, or mixed with any nutritious article of food (reacting alkaline), with milk, etc., in doses of from 3 to 30 grains three times a day. It can also be prescribed in mixtures, as it is perfectly soluble in water and tastes very pleasant with the admixture of Syrups.

Samples to Physicians will be mailed free upon application to

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